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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,639	02/15/2002	Hidekazu Shirakawa	NEC 01FN073	5470

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EXAMINER
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PATEL, GAUTAM

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/077,639

Applicant(s)

SHIRAKAWA ET AL.

Examiner

Gautam R. Patel

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 5-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2-15-02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

Claims 1-13 are pending for the examination. Action on claims 1-4 and 10-13 follows.

#### **Priority**

1. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

#### **Election/Restriction**

2. Claims 5-9 are withdrawn from further consideration by the examiner, 37 C.F.R. § 1.142(b) as being drawn to a non-elected species. Election was made without traverse in Paper dated 12-20-05.

NOTE: Since there was no mention or argument regarding traverse, it is taken that election was without traverse. For time being non-elected claims are kept in the application.

### **NOTES & REMARKS**

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification. For example page 17 of the specification line 17 has "90?". It seems it should be 90<sup>0</sup>.

#### **Drawings/Objection**

4. The drawings are objected for following reasons:

The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "a condenser" must be shown or the feature cancelled from the claim. **No new matter should be entered.**

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Applicant is required to submit a proposed drawing correction in response to this Office Action. Any proposal by the applicant for amendment of the drawings to cure defects must consist of following:

Drawing changes must be made by presenting replacement figures which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments, or remarks, section of the amendment, and may be *accompanied by a marked-up copy of one or more of the figures being amended, with annotations*. Any replacement drawing sheet *must be identified in the top margin as "Replacement Sheet"* and include all of the figures appearing on the immediate prior version of the sheet, even though only one figure may be amended. *Any marked-up (annotated) copy showing changes must be labeled "Annotated Marked-up Drawings" and accompany the replacement sheet in the amendment (e.g., as an appendix).*

Correction is required.

### Specification

5. The disclosure is objected for following reasons.

The title of the invention is neither precise nor descriptive. A new title is required which should include, using twenty words or fewer, claimed features that differentiate the invention from the Prior Art. It is recommended that the title should reflect the gist of or the improvement of the present invention.

Correction is required.

### Claim Rejections - 35 U.S.C. § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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Claims 1-2, and 10-11 are rejected under 35 U.S.C. § 102(e) as being anticipated by Furukawa et al., US. Patent 6,628,582 (hereafter Furukawa).

As to claim 1, Furukawa discloses the invention as claimed [see Figs. 1 and 4-6] including a condenser, a signal detector and a thickness error detector, comprising:

a condenser [fig. 1, unit 27] for condensing light for recording or reproducing information on said recording layer via a transparent substrate [fig. 1, unit 40's substrate] of the optical disk [col. 2, line 49 to col. 3, line 12];

a signal detector [fig. 1, unit 50] for detecting focus error signals and focus sum signals from return light reflecting from said recording layer; and

a thickness error detector [fig. 1, unit 50] for detecting thickness errors of said transparent substrate with reference to a specified value, based on the characteristics of said focus error signals [col. 3, line 43 to col. 4, line 4].

7. The aforementioned claim 2, recites the following elements, inter alia, disclosed in Furukawa:

a condenser [fig. 1, unit 27] for condensing light for recording or reproducing information on said recording layer via a transparent substrate [fig. 1, unit 40's substrate] of the optical disk [col. 2, line 49 to col. 3, line 12];

a signal detector [fig. 1, unit 50] for detecting focus error signals and focus sum signals from return light reflecting from said recording layer; and

a thickness error detector [fig. 1, unit 50] for detecting thickness errors of said transparent substrate with reference to a specified value based on the peak position of said focus sum signals [FE] [col. 3, line 43 to col. 4, line 4].

8. The aforementioned claim 10, recites the following elements, inter alia, disclosed in Furukawa:

a spherical aberration compensator [fig. 1, unit 22] for compensating for spherical aberration caused by the thickness error of said transparent substrate placed on said signal detector's optical path [col. 2, line 49 to col. 3, line 12].

9. As to claim 11, it is rejected for the same reasons set forth in the rejection of claim 10, *supra*.

### **Claim Rejections - 35 U.S.C. § 103**

10. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Furukawa as applied to claims 1-2 above in view of Tateishi et al., US. patent 6,584,048 (hereafter Tateishi).

As to claim 3, Furukawa discloses all of the above elements, including aberration correction caused by the thickness variations of the transmissive [transparent] substrate and detection of focus error signal and focus sum signals. Furukawa does not specifically disclose that these are detected by the well known knife-edge method to the extent claimed.

However, knife-edge method has been well known in the art for a long time [see US patent 4,533,826]. Also Tateishi clearly discloses:

that focus error signal and focus sum signals can be detected by knife-edge method and spot-size method or knife-edge method can be used alternatively [col. 10, lines 29-61 and fig. 5B]; and

said thickness error detector detects the thickness error of said transparent substrate and its symbol based on differences in the absolute value between the positive peak and negative peak of said focus error signals [col. 10, lines 29-61 and fig. 5B].

Both Furukawa and Tateishi are interested in improving the focus error detection mechanism in an optical disk device.

One of ordinary skill in the art at the time of invention would have realized that the system of Furukawa would be sensitive vibration of the disc surface and any extraneous noise would have compromised the quality of the electrical signals.

Therefore, it would have been obvious to have used a knife-edge method in the system of Furukawa as taught by Tateishi because one would be motivated to reduce noise in the system of Furukawa and provide better signal controls and improve quality of the signal and provide better control [col. 2, lines 14-21; Tateishi].

11. The aforementioned claim 4, recites the following elements, inter alia, disclosed in Tateishi:

said signal detector detects said focus error signals and said focus sum signals by means of the knife-edge method; and said thickness error detector detects the thickness error of said transparent substrate or its symbol based on differences between the peak point of said focus sum signal and the zero point of said focus error signal in their focus positions [col. 10, lines 29-61 and fig. 5B].

### **Allowable Subject Matter**

12. Claims 12-13 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

NOTE: Claims 12-13 are allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose an optical disk device which includes a controller for calculating a compensating factor for the spherical aberration “at each radial position of the disk based on the thickness errors of the transparent substrate detected at various radial positions on the optical disk prior to recording or reproducing information, and

causing the spherical aberration compensator to compensate based on the compensation factors during recording or reproducing”.

It is noted that the closest prior art, Furukawa shows a similar apparatus, which has a controller for calculating compensation for spherical aberration. However Furukawa fails to disclose a compensating factor for the spherical aberration at each radial position of the disk based on the thickness errors of the transparent substrate detected at various radial positions on the optical disk prior to recording or reproducing information, **and** causing the spherical aberration compensator to compensate based on the compensation factors during recording or reproducing

### **Other prior art cited**

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Kikuchi et al. (US. Patent 6,339,570) “Optical pickup system”.
- b. Holtslag et al. (US. patent 5,677,903) “Multi-layer information ...”.
- c. Terada (US. patent 5,177,726) “Apparatus for recording ...”
- d. Iwazaki (US. patent 5,136,566) “Focus actuator ....”.
- e. Van Alem (US. patent 4,533,826) “Opto-electronic ...”.
- f. Ueyama (US. patent 5,881,035) “Optical pickup ...”.
- g. Iida (US. patent 5,414,682) “Focus draw-in ...”.

### **Contact Information**

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is 703-872-9306.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (571) 272-7629.

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.

Gautam R. Patel  
Primary Examiner  
Group Art Unit 2655

A handwritten signature in black ink, appearing to read "Gautam R. Patel", with a long horizontal line extending from the end of the signature.

**GAUTAM R. PATEL**  
**PRIMARY EXAMINER**

March 17, 2005